

WHAT IS CLAIMED IS:

1. A method, comprising:

receiving a handle associated with a version indicator sent from the server to the client;

requesting a service from the server using the handle;

examining the validity of the handle based on the version indicator; and

providing, if the handle is valid, the requested service.

2. The method according to claim 1, wherein the handle includes:

a version number to serve as the version indicator of the handle; and

an index that points to an element data block of an allocated buffer in a data pool within the server.

3. The method according to claim 2, wherein the index comprises:

a buffer index that points to the allocated buffer in the data pool; and

an element index that points to an entry in element meta data for the allocated buffer, the entry corresponding to the element data block in the allocated buffer and containing information describing the status of the element data block.

4. The method according to claim 3, further comprising, prior to said receiving the handle:

generating pool meta data that describes the data pool;

generating a buffer pointer list containing at least one buffer index, each of which pointing to a corresponding buffer in data pool; and

generating element meta data for each corresponding buffer, containing a plurality of entries, each of which associates with an element data block in the corresponding buffer and includes a version number, indicating the version of the element data block, a usage flag, indicating whether the element data block is currently in use, as well as an element pointer that specifies the location of the element data block in the corresponding buffer.

5. The method according to claim 4, wherein the pool meta includes at least some of:
a quantity factor which determines a total number of buffers that can be allocated on the server;

a buffer size factor which determines the number of element data blocks in a buffer;
and

an allocated buffer factor that indicates a total number of currently allocated buffers on the server.

6. A method for a server, comprising:

waiting for a client to open a connection;

generating a handle with a version indicator for the connection;

sending the handle to the client;

receiving a service request from the client using the handle for a service;

verifying the validity of the handle based on the version indicator; and

providing, if the handle is valid, the requested service.

7. The method according to claim 6, further comprising, prior to said generating:
generating pool meta data describing the organization of a data pool;
generating a buffer pointer list containing at least one buffer index, each of the buffer index pointing to a corresponding buffer in the data pool; and

generating element meta data for each corresponding buffer, containing a plurality of entries, each of which associates with an element data block in the corresponding buffer and includes a version number, indicating the version of the element data block, a usage flag, indicating whether the element data block is currently in use, as well as an element pointer that specifies the location of the element data block in the corresponding buffer.

8. The method according to claim 7, wherein the pool meta includes at least some of:
a quantity factor which determines a total number of buffers that can be allocated on the server;

a buffer size factor which determines the number of element data blocks in a buffer;
and

an allocated buffer factor that indicates a total number of currently allocated buffers on the server.

9. The method according to claim 8, wherein the handle comprises:

a version number to serve as a version indicator of the handle; and

a buffer index that points to a buffer that has been allocated in the server; and

an element index that points to an entry in element meta data for the buffer, the entry corresponding to an element data block in the buffer and containing a version number indicating the version of the element data block.

10. The method according to claim 9, wherein said generating a handle comprises:
identifying an available element data block in an allocated buffer;
obtaining a version number and an element index of the available element data block from the element meta data of the allocated buffer, and a buffer index of the allocated buffer from the buffer pointer list; and
constructing the handle based on the version number, the element index, and the buffer index.

11. The method according to claim 10, further comprising:
allocating, if the available element data block can not be identified from any buffer that has been allocated, a new buffer with a number of element data blocks determined according to the buffer size factor;
creating element meta data for the new buffer;
initializing the element meta data created for the new buffer;
updating the buffer pointer list to include a buffer index pointing to the new buffer;
and
selecting, prior to said obtaining, an element data block from the new buffer as the available element data block.

12. The method according to claim 11, wherein said verifying the validity of the handle comprises:

extracting the version indicator contained in the handle;

retrieving a version number from an entry of the element meta data, indexed by the element index in the handle and representing the version of a corresponding element data block, the element meta data associating with a buffer that is indexed by the buffer index in the handle;

determining whether the version indicator from the handle is consistent with the version number of the element data block of the buffer represented by the handle.

13. The method according to claim 12, further comprising:

updating, when the connection is closed, the version number of the element data block in the element meta data.

14. A system, comprising:

a data pool mechanism residing on a server for providing services based on the validity of a service request; and

a client connecting to the server for obtaining a service from the server by sending a service request to the server using a handle, generated by the server with a version indicator, the service being obtained if the handle is valid determined based on the version indicator.

15. The system according to claim 14, wherein the data pool mechanism comprises:

a plurality of data blocks for storing data that is accessible to the client when the handle is valid;

meta data for providing description and indices of the data blocks, the description including a version number for each of the data blocks;

a handle validation mechanism for validating the handle received from the client with the service request based on the version indicator and the version number of an element data block indexed by the handle; and

a data access mechanism for accessing the data blocks if the handle is valid.

16. The system according to claim 15, further comprising:

a handle generation mechanism for constructing a handle based on the meta data; and
a meta data update mechanism for updating the meta data.

17. A system for a data pool mechanism, comprising:

a client management mechanism for processing a service request sent from a client using a handle with a version indicator;

a plurality of data blocks for storing data that is accessible to the client;

meta data for providing description and indices of the data blocks, the description including a version number for each of the data blocks;

a handle validation mechanism for validating the handle received from the client with the service request based on the version indicator and the version number of an element data block indexed by the handle; and

a data access mechanism for accessing the data blocks if the handle is valid.

18. The system according to claim 17, wherein the plurality of data blocks are organized into a set of allocated buffers, each of which includes a plurality of element data blocks.

19. The system according to claim 18, wherein the meta data includes at least some of:

pool meta data for describing the organization of the plurality of data blocks;
a buffer pointer list; and
element meta data.

20. The system according to claim 19, wherein the handle validation mechanism includes:

a handle parsing mechanism for parsing the handle; and
a handle verification mechanism for verifying that the version indicator extracted from the handle is consistent with the version number of the element data block to which the handle indexes.

21. The system according to claim 20, further comprising:

a buffer allocation mechanism for allocating a new buffer, when there is no available element data block in the allocated buffers, to generate a new allocated buffer;

a meta data update mechanism for updating the meta data, either when a new allocated buffer is generated or when the connection with the client is closed to generate updated meta data; and

a handle generation mechanism for constructing a handle based on the updated meta data.

22. A machine-accessible medium encoded with data, the data, when accessed, causing:

receiving a handle associated with a version indicator sent from the server to the client;

requesting a service from the server using the handle;

examining the validity of the handle based on the version indicator; and

providing, if the handle is valid, the requested service.

23. The medium according to claim 22, the data, when accessed, further causing, prior to said receiving the handle:

generating pool meta data that describes the data pool;

generating a buffer pointer list containing at least one buffer index, each of which pointing to a corresponding buffer in data pool; and

generating element meta data for each corresponding buffer, containing a plurality of entries, each of which associates with an element data block in the corresponding buffer and includes a version number, indicating the version of the element data block, a usage flag,

indicating whether the element data block is currently in use, as well as an element pointer that specifies the location of the element data block in the corresponding buffer.

24. A machine-accessible medium encoded with data, the data, when accessed, causing:

- waiting for a client to open a connection;
- generating a handle with a version indicator for the connection;
- sending the handle to the client;
- receiving a service request from the client using the handle for a service;
- verifying the validity of the handle based on the version indicator; and
- providing, if the handle is valid, the requested service.

25. The medium according to claim 24, the data, when accessed, further causing, prior to said generating:

- generating pool meta data describing the organization of a data pool;
- generating a buffer pointer list containing at least one buffer index, each of the buffer index pointing to a corresponding buffer in the data pool; and
- generating element meta data for each corresponding buffer, containing a plurality of entries, each of which associates with an element data block in the corresponding buffer and includes a version number, indicating the version of the element data block, a usage flag, indicating whether the element data block is currently in use, as well as an element pointer that specifies the location of the element data block in the corresponding buffer.

26. The medium according to claim 24, wherein said generating a handle comprises:

- identifying an available element data block in an allocated buffer;
- obtaining a version number and an element index of the available element data block from the element meta data of the allocated buffer, and a buffer index of the allocated buffer from the buffer pointer list; and
- constructing the handle based on the version number, the element index, and the buffer index.

27. The medium according to claim 26, the code, when accessed, further causing:

- allocating, if the available element data block can not be identified from any buffer that has been allocated, a new buffer with a number of element data blocks determined according to the buffer size factor;
- creating element meta data for the new buffer;
- initializing the element meta data created for the new buffer;
- updating the buffer pointer list to include a buffer index pointing to the new buffer;

and

- selecting, prior to said obtaining, an element data block from the new buffer as the available element data block.

28. The medium according to claim 27, wherein said verifying the validity of the handle comprises:

- extracting the version indicator contained in the handle;

retrieving a version number from an entry of the element meta data, indexed by the element index in the handle and representing the version of a corresponding element data block, the element meta data associating with a buffer that is indexed by the buffer index in the handle;

determining whether the version indicator from the handle is consistent with the version number of the element data block of the buffer represented by the handle.

29. The medium according to claim 28, the data, when accessed, further causing:
updating, when the connection is closed, the version number of the element data block in the element meta data.